Claims

What is claimed is

1.   A method of recognising a pattern comprising a sequence of sub-patterns, the method comprising:

generating a data sequence representative of a physical entity;

applying the data sequence to a set comprising active models in a network of models including at least one model;

selecting a subset of the outputs of the members of said set according to a predetermined criterion; and

10   adding further models to said set in dependence on the members of said subset,

wherein each model represents a sub-pattern and in use outputs an indication of the degree of matching between an input data sub-sequence and the represented sub-pattern, and the further models take the associated subset members as inputs.

15   2.   A method according to claim 1, wherein a further model is only added to said set if the set does not already contain that model.

3.   A method according to claim 1 or 2, wherein the data sequence is applied to the network element-by-element and the selection of a subset of the outputs of the set
20   of models is performed for each of successive applications of data sequence elements.

4.   A method according to claim 3, wherein each model comprises a finite state network

25   5.   A method according to claim 4, including assessing each state of members of said set and deactivating those states that do not meet a predetermined criterion, between the applications of successive data sequence elements.

6.   A method according to claim 5, wherein a model is removed from said set if all of its states have been deactivated.

7.   A method according to claim 5 ~~or 6~~ wherein the criterion applied to the model outputs is harsher than the criterion applied to states within models.

8.   A method according to ~~any one of claims 1 to 7~~ Claim 1, wherein the application of the criterion applied to model outputs comprises creating a histogram of model outputs on the basis of their values and selecting those outputs in the bins of the histogram which contain the outputs having the best m values, where m is an integer.

9.   A method according to claim 8, wherein model outputs are selected by setting output that are not selected to a predetermined value.

10.   A method according to ~~any one of claims 5 to 7~~ Claim 5, wherein the application of the criterion applied to all model states comprises creating a histogram of states on the basis of their values and selecting those states in the bins of the histogram which contain the states having the best n values, where n is an integer, for deactivation.

11.   A method of speech recognition according to ~~any one of claims 1 to 10~~ Claim 1.

12.   A method according to claim 11, wherein the models comprises models of sub-word vocalisations.

13.   A method of generating a speech signal comprising performing a method according to claim 11 ~~or 12~~ and operating a speech synthesizer in dependence on the result of performance of said method.

14.   A method of operating a telephone switching centre comprising performing a method according to claim 11 ~~or 13~~ and commanding a telephone switching centre for the purpose of establishing a telephone connection in dependence on the result of the performance of said method.

15. A method of operating a computer so as to recognise a pattern comprising a sequence of sub-patterns, the method comprising:

generating a data sequence representative of a physical entity;

applying the data sequence to a set comprising active models in a network of models including at least one model;

selecting a subset of the outputs of the members of said set according to a predetermined criterion; and

adding further models to said set in dependence on the members of said subset to thereby reduce the time required to recognise said pattern,

wherein each model represents a sub-pattern and in use outputs an indication of the degree of matching between an input data sub-sequence and the represented sub-pattern, and the further models take the associated subset members as inputs.

16. A pattern recognition apparatus for recognising a pattern comprising a sequence of sub-patterns, the apparatus comprising:

means for generating a data sequence representative of a physical entity;

means for applying the data sequence to a set comprising active models in a network of models including at least one model;

means for selecting a subset of the outputs of the members of said set according to a predetermined criterion; and

means for adding further models to said set in dependence on the members of said subset,

wherein each model represents a sub-pattern and in use outputs an indication of the degree of matching between an input data sub-sequence and the represented sub-pattern, and the further models take the associated subset members as inputs.

17. An apparatus according to claim 16, wherein a further model is only added to said set if the set does not already contain that model.

18. An apparatus according to claim 16 or 17, wherein the data sequence is applied to the network element-by-element and the selection of a subset of the outputs of the

first set of models is performed between the applications of successive data sequence elements.

19.   An apparatus according to claim 18, wherein each model comprises a finite
5   state network

20.   An apparatus according to claim 19, including means for assessing the values for each state of members of said set and deactivating those states that do not meet a predetermined criterion, between the applications of successive data sequence
10   elements.

21.   An apparatus according to claim 20, wherein a model is removed from said set is all of its states have been deactivated.

15   22.   An apparatus according to claim 20 ~~or 21~~, wherein the criterion applied to the model outputs is harsher than the criterion applied to states within models.

23.   A speech recognition apparatus according to Claim 16. ~~any one of claims 16 to 22.~~

20   24.   An apparatus according to claim 23, wherein the models comprise models of sub-word vocalisations.

25.   An apparatus for generating a speech signal comprising performing an apparatus according to claim 23 ~~or 24~~, and a speech synthesizer configured for
25   operation in dependence on the operation of the speech recognition apparatus.

26.   A telephone network apparatus comprising an apparatus according to claim 23 ~~or 24~~ and a telephone switching centre, wherein the telephone switching centre operates to establish a telephone connection in dependence on the operation of the
30   speech recognition apparatus.

27.   A method of pattern recognition substantially as hereinbefore described.

28.   A pattern recognition apparatus substantially as hereinbefore described with reference to the accompanying drawings.